ACCELERATOR TECHNOLOGY & APPLIED PHYSICS FY16 ES&H FOCUS AREA SELF-ASSESSMENT REPORT

CONFIGURATION CONTROL

February – June 2016

Signatures:

Approval:

Csaba Toth, Team Leader — 6/29/2016 date signed

Patricia Thomas, Safety Coordinator — 6/29/16 date signed

Wim Leemans, Division Director — 7/12/16 date signed

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1.0 Scope

This Focus Area was recommended by the Accelerator Technology and Applied Physics (ATAP) ES&H Operations Committee and approved by the Division Director (Wim Leemans) because of potential impact on safety of personnel. This assessment is most closely associated with the 1st Core Function of Integrated Safety Management, planning work. While there are very specific LBNL requirements for management of configuration control for work under Radiological Work Authorizations and the Accelerator Safety Order (DOE O 420.2C, Safety of Accelerator Facilities), the requirements for non-radiation experiments are less clear. Configuration control and/or change management have often been identified as causal factors in LBNL Lessons Learned summaries and other incident investigations. A review of Division self-assessment topics from 2010-2015 did not reveal any previous self-assessments that focused specifically on this issue. The scope of the assessment included locations where ATAP work takes place performed by ATAP employees and affiliates. ATAP personnel work throughout the LBNL site, including Buildings 6, 7, 15, 46, 47, 50, 53, the 58 complex, the 71 complex, 77/77A, and 88. There are currently about 145 people who are officially part of ATAP (employees, guests, students, etc.).

Lines of Inquiry

The assessment was designed to answer the following questions:

- What ATAP areas or systems need configuration control?
- How do ATAP Programs prepare for, manage, and document safety changes?
- How do ATAP Programs manage changes related to specific hazards (accelerator/radiation safety, lasers, chemicals, high-pressure and vacuum systems, electrical systems)?
- How can ATAP configuration control systems be improved?

2.0 Methodology

ATAP Program Heads selected representatives to serve on the assessment team:

- Fernando Sannibale (Advanced Light Source Accelerator Physics Program– Advanced Photoinjector EXperiment);
- Csaba Toth (Team Leader – BErkeley Lab Laser Accelerator Center);
- Tianhuan Luo (Center for Beam Physics);
- Bernhard Ludewigt (Fusion Science and Ion Beam Technology)
- GianLuca Sabbi (Superconducting Magnet Program).

Karen Nunez and Tom Scarvie provided information about Configuration Control systems at the Advanced Light Source. Pat Thomas (ATAP ESH Coordinator) and Tammy Welcome (Office of Contractor Assurance) provided guidance on the self-assessment process.

The assessment took place from February to May 2016:

- February 8 – Team introductions; discussed self-assessment process, scope, methodologies and schedule;
- February 17 -- Selected Team Leader, discussed existing Configuration Control requirements;
- March 15 – Benchmarked with Advanced Light Source
- April 4 – Discussed assessment scope and methodology (interview assignments), Lines of Inquiry;
- April 20 – Developed interview questionnaire;
- April 20 – May 20– Conducted interviews;
- May 6 – Discussed interview results;
- May 23 – Developed observations and recommendations, draft report;
- June 10 – Draft report to ATAP management for review;
- June 30 – Final report developed, reviewed, and submitted for signature.

The primary assessment methodology was to conduct interviews (see section 4.1 Interview Questions and Results). 14 people were interviewed.

3.0 Results

From the interviews, the assessment team learned that a graded approach to Configuration Control is most appropriate, based on the level of complexity of the experimental activity:

- **High complexity** -- For User Facilities, such as the Advanced Light Source, a very formal system of configuration control documentation and review is necessary and is, in fact, in place.
- **Low complexity** -- For small experiments under a single PI with a small group of participants, which characterizes most ATAP research, the current practices of oversight of the PI, good communication within the group, and documentation in the Work Planning and Control Activity, experiment logbook, and internal procedures (as needed) appears to be working well.
- **Medium complexity** -- There is a transitional level of complexity for experiments that could become User Facilities in the future, such as BELLA Center, APEX High Repetition rate Electron Scattering beamline (HiRES), and Neutral Drift Compression Experiment (NDCX-II). These experiments will need to periodically review their Configuration Control methods and internal communications and gradually increase the level of formal documentation as their level of complexity grows.

An **Observation** is a practice or condition that is not technically noncompliant with an external or internal regulation or requirement, but could lead to noncompliance if left unaddressed. **There was one Observation -- two BELLA interviewees indicated that the research group needs more communication about the safety envelope for their work.** *"Definition of thresholds and triggers needs to be more clear, occasionally to discuss in the group, what falls into the areas of control."* And *"Would be better to get clearer communication of limits, and summarize, where to find them in each hazard area/type."* BELLA Center is growing in complexity, and the documentation of different aspects of the work scope and hazards is found in several Accelerator Safety documents and Work Planning and Control Activities.

Recommendations:

Based on the feedback received from the interviewed employees and also from the representatives of each programs, the committee recommends action items listed below. In order to increase the level of awareness toward the principles and proven practices of Configuration Control, the committee suggests for **each ATAP program** to review their own Configuration Control policies (written individually, or referenced to LBNL-, or ATAP-wide centralized documentation) during the following 9 months. These internal review and/or update processes should include to:

- **Discuss** (e.g. in an all-hand Program Safety meeting) the general lab-wide and local, program specific configuration control methods;
- **Develop** formal local authorization pathways for hazardous activities, as needed (for Medium and High complexity systems, see above);
- **Identify** the triggering actions, and critical thresholds of the levels of changes that require specific documentation and approval processes; and
- **Organize** training for specific employees and or Work Activity Leads to become able to determine and judge those trigger events and propose actions accordingly (for Medium and High complexity systems, see above).

4.0 Supporting Documents

4.1 Interview Questions and Results

1. What are the areas, or systems that need configuration control in your area?

Discussion points:

- Describe what you do.
- What are the main hazards?
- Do you see, that new hazards might appear as a result of changes in experimental configurations? Please specify.

Answers and Comments:

Advanced Light Source (ALS) Accelerator Physics

I am a member of the ALS Accelerator Physics Group and I am the Operations Group Leader at the ALS, supervising nine Accelerator/Floor Operators.

I also am a co-Chair of the ALS Beamline Review Committee, which looks at all beamline modifications to ensure all hazards are accounted for and controlled, as well as reviewing other technical details.

I also am the Chair of the Accelerator Review Committee, which looks at all accelerator modifications to ensure all hazards are accounted for and controlled and that the modification won't degrade operations.

Main hazards: Possibility for radiation exposure if shielding is not properly designed and controlled. Possibility for electrical, compressed gas/vacuum exposure, etc. (considered during beamline reviews but we call in experts for that).

The main safety area of concern in my role is experimental beamline configuration changes at the ALS. Floor Operators are responsible for controlling all shielding work and checking for shielding integrity prior to making a beamline operational after work is complete.

It is entirely possible that extremely harmful radiation exposures might occur if changes are not appropriate or work is not done properly, so configuration control is absolutely essential. Floor Operators are also responsible for providing training to beamline personnel on how to follow the configuration control procedures. They are increasingly taking on responsibilities traditionally

performed by Radiation Protection Group Radiological Control Technicians, including radiation surveys annually at beamlines and for beamline commissioning activities.

BErkeley Lab Laser Accelerator (BELLA)1

High power lasers interaction with gas targets, produce 100s of MeV electrons.
Main hazards: Laser hazards, radiation.
YES, new hazards could occur -> if adding a second beamline, during the alignment of this new addition, or changing the beam splitter. Not new type, but the same type at new areas of appearance -> same type of control can be used.

BELLA2

Experimental scientist working with high power laser and electron beams, generate and transport electron beams, generate and measure radiation.
Main hazards are: High power laser beam, radiation from the electron beam, high power electrical discharge.
YES: pointing the laser beam and electron beam to new directions. Not necessarily new type, but new area, and therefore the mitigation need to be extended. Very rear, when new type of hazard is generated and new type of mitigation would be needed (such example is ion generation instead of electrons).

BELLA3

I work on the target experiments with lasers, generating electrons and radiations.
Main hazards: Radiation, lasers.
If I see (or even imagine) new hazard, then for sure it belongs to Configuration Control.

Center for Beam Physics (CBP)1

Electronic technician matrixed from Engineering Division.
Laser.
No. No big experiment. Small laser, commercial.

CBP2

LLRF timing system. Advance control.
Ergonomics, laser, electronics.
No. Always wear goggle for laser. Always keep voltage <50V for electronics.

CBP3

Assemble optical components.
Laser beam.
Move optics.
Wear goggles.

Fusion Science and Ion Beam Technology (F&IBT) 1

Plasma assisted coating for accelerators and other applications.

Hazards: High Voltage, stored energy.
Yes, if configuration change done incorrectly.

FS&IBT2
NDCX-II, neutron generator & ion source develop.
Hazards: ionizing radiation, High Voltage, stored energy.
Yes. For example, changes to NDCX2 injector & source High Voltage pulsing.

Supeconducting Magnet Program (SMP)
Superconducting design magnet fabrication and testing.
Hazards include high current/voltage, high magnetic field, and cryogenic operations. Of course these hazards depend on the specific parameters conditions of each magnet/experiment.

2. How do you plan the review and approval of experiment modification (i.e. preparation for changes)?

Discussion points:

- Please give some examples for such events.
- Describe the steps taken.
- Any procedure to control theses steps?

Answers and Comments:

ALS

Examples:

- A beamline wants to change a vacuum pump to a different style
- A beamline wants to change the first optic that intercepts synchrotron radiation and re-align the whole beamline.
- The ALS wants to tear out an old beamline and build a new one

For any change the Beamline personnel contact the Floor Operators, who either control the process with a Shielding Change Form or refer it on to the Beamline Review Committee (BRC). Any changes are supposed to be brought to the attention of the BRC one way or another, preferably through Floor Operators but sometimes directly from Beamline people to BRC. At least 2 of the 3 Chairs meet to understand the proposed changes and decide on what level of further review is required: none, abbreviated (where only relevant system experts attend), or full, where system experts from all aspects of beamline design, construction, and operation are required.

There are procedures that detail these processes, which are in the Google Drive folder.

BELLA1

Second beamline -> counterpropagating beam -> Gamma radiation will also propagate to new the angles. Do not know protocol, but may exist. Start with low power and proper beam dumps. Any planned changes are discussed with the PI at the group meeting for the new layout -> to talk to experienced experimentalists, who understand the system better, and develop alignment and operation procedure together with them.

BELLA2

Modifications always proceeded by detailed discussions in group meetings and in small expert groups, lots of people involved, and vet the idea. Example: the laser interlock system modification.
I do not know any procedure how to do it. Always ask responsible people, contact them (Laser Safety Officer, BELLA Operations Coordinator)

BELLA3

Example: putting new mirror in the beamline -> get the permission from PI, and talk to BELLA Operations Coordinator and PI. Do not know any specific procedure -> rely on contacts, who deals with safety.

CBP1/2/3

High risk only when changing the laser. Notify the Laser Safety Officer (LSO), change the laser, realign, done. / No response. / No danger because of goggles and low power laser.

FS&IBT1

Coater setup/configuration change.
Discussion with all involved.
Work done with Lockout/Tagout (LOTO) in place
PI controls and approves

FS&IBT2

Discuss safety implications with all involved, evaluate: changes in Work Planning and Control triggered? Within limits of Radiological Work Authorization? LOTO impacted?
Consult with engineer, develop eng & admin controls if needed

SMP

See examples below describing various new installations or procedures that required re-evaluating the safety controls. In general, PIs will initiate these processes. SMP is not a user facility, activities in the various areas are under direct control of the PIs who are able to recognize whether changes in configuration or new experimental control should trigger the need for changes in the safety controls, and request the assistance of safety experts.

Examples:

- A cool-down of a LARP magnet structure, performed at the magnet test facility, triggered a dedicated Work Planning and Control (WPC) Activity (AF-0028) mainly due to the potential oxygen deficiency concerns related to the use of 800 liters of Liquid Nitrogen in the cryostat pit of Building 58, which was not covered by the magnet test Work Planning and Control Activity (AF-0021).
- The magnet test plan developed before every, magnet test allows the PI to recognize whether conditions and procedures are within the boundaries covered by the WPC, if not, appropriate extensions or modifications are triggered, e.g. through sub-activities.
- Major upgrades such as the recent installation of a new 24 kA power supply triggered extensive design and planning effort, including appropriate safety reviews, with close communication with all stakeholders.
- Installation of new equipment from Fermi National Accelerator Laboratory for short sample reaction and testing is also triggering safety reviews and WPC updates.

3. How do you manage and document safety related changes (i.e. actual change)?

Discussion points:

- Please give some examples for such events.
- Describe the steps taken.
- Any procedure to control theses steps?

Answers and Comments:

ALS

See examples (in response to question 2) above.

For beamlines:

- Floor Operators or BRC contacted
- If simple, straight to a Shielding Change Form
- If complex, referred to BRC

Accelerator:

- ARC for big projects
- High-level software code changes with possible safety implications are reviewed by two people and documented in online log
- Low-level software code changes with possible safety implications are in version control system

There are procedures that detail these processes, which are in the Google Drive folder.

BELLA1/2/3

I do not know any specific procedure for this. / Keep in contact with the safety people and relying on them for guidance. (Not aware of any specific procedure.) / Talk to higher ups - I do not specifically know procedures that control those steps. Details of steps should be known by them.

CBP1/2/3

Door sign; eye sign; make sure everyone has on-the-job training; interlock safety check. / When purchasing equipment, make sure <50V. / For future upgrade to larger laser power, upgrade the goggles – So far, no such plans.

FS&IBT1

All steps documented in logbook.
1 logbook for each chamber.

WPC covers work broadly.

FS&IBT2

Example: NDCX source modification.
Document changes in logbook, check if changes within WPC and RWA.

Supercon

SMP is not a user facility and the PIs have direct control of the experiments. They analyze each new project and trigger safety reviews through appropriate contacts.

4. How do you follow DOE requirements related to accelerators and/or radiation safety?

Discussion points:

- Who ensures compliance in your organizations?
- What are the triggers for more documentation and change control?

Answers and Comments:

ALS

Operators are radiation workers who are the front line of ensuring compliance.

ALS Safety Manager oversees all ALS work.

RPG assists and monitors our work.

Changes to Accelerator Operations or Safety Envelope triggers review and revision.

BELLA1

I do not know, would ask Operations Coordinator) or PI.
If energy change needs to be done at a beamline, physical parameters (such as energy of the beam) of the interactions will determine what is allowed, and what is not.

BELLA2

Generally aware of what the documents are – (Accelerator Safety Envelope, RWA modification -> rely on those documents).
Have general idea -> but not clear how to communicate with workers (anything shielding blocks, interlock certainly, but not clear beyond that) – we still discussing in the group).
Based on lots of discussion in group meetings, and constantly getting guidelines from experts.

BELLA3

Operations Coordinator -> Radiation Protection Group.
Difficult to decide. Certainly a trigger, if the change would generate new radiation. At the same time, difficult to determine, if a certain components is part of the system, or not?
If it is not clear, one needs to use more safety screws to avoid removal of components (those screws are better protection, than signs or labels)

CBP1/2/3

No response / Electronics technician / Electronics technician tracks all the documentation and changes.

FS&IBT1

RWA for Vacuum ion source.
PI ensures compliance; any change would trigger new review.

FS&IBT2

PI, work lead, all trained with Radiation Protection Group.
Not clearly within RWA (yield, current, energy change; shielding mod)

SMP

SMP does not operate accelerators or radiation sources.

5. How do you follow Laser Safety requirements related to configuration changes?

Discussion points:

- Who ensures compliance in your organizations?
- What are the triggers for more documentation and change control?

Answers and Comments:

ALS

WPC activity for each laser

EHS Laser Safety Officer

BELLA1

Until now in my experience I did not needed to change the configuration. If major change –> contact LSO. As long as diagnostics beams concern -> we can do it -> for major beamline change, need further approval;

BELLA2

Talk to LSO and Operations Coordinator, and relying on written authorization.

BELLA3

Operations Coordinator and EH&S.
Laser eye hazards; more critical, if new generation of X-rays or electrons, and if I cannot send a laser beam somewhere I want, and cannot do without defeating the interlock. Still, the triggers are not clearly defined.

CBP1/2/3

No response / Rely on WPC / Follow LBNL safety training and requirements

FS&IBT1

N/a

FS&IBT2

PI, work lead, all trained with LSO

SMP

N/A

6. How do you manage the changes of usage of chemicals?

Discussion points:

- Who ensures compliance with PUB-3000 in your organizations?
- How do you ensure that safety is not compromised?
- What are the triggers for more documentation and change control?

Answers and Comments:

ALS

ALS Chemical Safety Manager

WPC activities for all chemical use

BELLA1/2/3

Operations Coordinator, PI – but mostly not applicable/ Not used a lot -> following general rules / Talk to Operations Coordinator -> not typical

CBP1/2/3

No response / No response / No response

FS&IBT1

PI ensures compliance.
PI checks Material Safety Data Sheets, if question, consults with EH&S.
New material, or used differently.

FS&IBT2

Individual researcher, PI with DSC and building manager.
Check MSDS, ask EHS if in doubt.
New chemicals, uses.

SMP

PIs for the various facilities, with the assistance of technical staff that often assigned to keep track of inventories and documentation in accordance with LBNL policies.

7. How you manage changes related to high-pressure vessels and vacuum systems?

Discussion points:

- Who ensures compliance in your organizations?
- How do you ensure that safety is not compromised?
- What are the triggers for more documentation and change control?

Answers and Comments:

ALS
Review any changes with system experts.

WPC activities for the few Accelerator Physicists who deal with cryogens.

BELLA1/2/3
I do not have authority -> talk to Mechanical Systems Work Lead. / Following general rules on high-pressure gas systems: -> relying on Technical Expert in the group (maybe an area of shortcoming -> need more communication). The existing class and the periodic refresher is not necessarily enough -> suggestion for maybe once a year a very targeted training -> going through the type of gas regulators, tubing, hosing, what are the dangers. If changes needed, things need to bring up to the PI at the morning Operations Meeting -> If anything is doing outside of our routine -> need to follow up at higher level. Need to have this mindset for everyone. / Go to Mechanical Systems Work Lead, who knows the system-> bring up the topic at the morning meeting.

CBP1/2/3
No response. / No response. / No response.

FS&IBT1
PI.
If any question, consult engineering.
Change control is triggered if change involves other than CF component.

FS&IBT2
(Don't change high-pressure vessels).
PI & work leads, consultation with engineers.
Documentation in logbook.
Changes to WPC, procedures, more than change of standard parts.

SMP
PIs for the various facilities, with the assistance of technical staff that often assigned to keep track of inventories and documentation in accordance with LBNL policies.

8. How do you manage changes related to electrical system systems?

Discussion points:

- Who ensures compliance in your organizations?
- How do you ensure that safety is not compromised?
- What are the triggers for more documentation and change control?

Answers and Comments:

ALS

ALS Electrical Safety Officer.
Electrical Techs required to be on shift to run the ALS.
Regular inspections.
Helpful attitude to encourage anyone with a concern to come and get help.

BELLA1/2/3

I do not have authority -> talk to Electrical Systems Work Lead. / I do not manage -> rely on Electrical Systems Work Lead. / Electrical Systems Work Lead and work with their group.
Not supposed to work on electrical units, anyway.

CBP1/2/3

No response. /Isolate LLRF system for machine protection and personnel protection; set clear boundary. / No response.

FS&IBT1

PI.
Group discussion on scope and hazards; LOTO. Checked by PI.
Work goes beyond scope defined in WPC.

FS&IBT2

PI, work lead
Consultation with engineer, approval
Increased or changed hazards.

SMP

PIs for the various facilities, with the assistance of technical staff that often assigned to keep track of inventories and documentation in accordance with LBNL policies.

9. Do you have any 'Best Practices' that are worth sharing?

Discussion points:
Please share, if you have some Lessons Learned, or best practices in Configuration Control.

Answers and Comments:

ALS
We find that having one-on-one discussions between Floor Operators and Beamline personnel who will actually work on beamlines is valuable for making sure they understand what they are permitted to do and how to follow our config. control procedures.

The BRC initial scoping reviews for any given modification seem to be helpful in not wasting more peoples' time than necessary.

BELLA1/2/3
I think the level of control is appropriate. / If anything beyond comfort zone -> talk to specific expert, go to safety coordinator. /No comment

CBP1/2/3
Have laser shielding at the door. / No response / Wearing goggles Block the beam; prevent stray light

FS&IBT1
Keep good record in logboook, not only "success" but issues.

10. Any other recommendations?

Discussion points:
Please tell us, if you have any specific suggestion or recommendations related to Configuration Control.

Answers and Comments:

BELLA1/2/3
I think the level of control is appropriate. / Would be better to get clearer communication of limits, and summarize, where to find them in each hazard area/type. / Definition of thresholds and triggers needs to be more clear, occasionally to discuss in the group, what falls into the areas of control.

SMP
The current safety controls appear to work well for the needs of the Superconducting Magnet Program.

4.2 Current Requirements

LBNL Policy

The ***LBNL Requirements and Policies Manual***, Quality Assurance Policy, defines Configuration Management as " The process of identifying and defining the configuration items in a system, controlling the release and change of these items throughout the system life cycle, and the recording and reporting of the status of configuration items and change requests."

PUB-3111*Quality Assurance Program Description, Rev. 11* , Section 4.1 Design, describes configuration management processes as follows: "Organizations implement configuration management procedures, techniques, and tools to manage, evaluate proposed changes, track the status of changes, and to maintain an inventory of system and support documents as the system changes. Configuration management, applied throughout the lifecycle, establishes and maintains the consistency of an item's performance, functional and/or physical attributes with its requirements, design and operational information throughout its life. A configuration management process allows management to track requirements throughout the life cycle through acceptance and operations and maintenance. As changes are inevitably made to the requirements and design, they are approved and documented, creating an accurate record of the system status." It then refers to the ***Engineering Process Guide*** and **PUB-3193 *Design and Construction Management Procedures Manual.***

Engineering Process Guide describes how "Change Control for projects is applied in a graded approach in the Conduct of Engineering."

Components, assembly or part that meet 2 or more of the following criteria may be placed under change control as determined by line management.
a) Equipment lifetime is greater than 10 years
b) Item is critical for equipment protection
c) Item is critical for functionality of the equipment
d) Equipment value exceeds $250k"

A ***Grade Assessment*** determines the level of formality to apply to each required project step. The project grade is based on five criteria: cost, complexity, contingency, impact, and other. The Project Manager performs the Grade Assessment by assigning a grade of Low, Medium or High to each criterion. Following the grade assessment the project management rigor and required formality are determined. The Conduct of Engineering provides a guideline for the project formality based on the grade assessment.

- The ***Cost Criterion*** is the total estimated cost of the project, including indirect costs and contingency. A large (*high cost*) project will have a greater impact on the customer than a small (*low cost*) project, and hence, deserves more formality. Likewise, a large project can absorb the costs of increased formality with less impact than a small project. The percentage of cost that are catalog items can be considered as part of the complexity criteria.

- The C***omplexity Criterion (technical, regulatory, administrative)*** evaluates the risk to the successful completion of the project introduced by any aspect of the project that is complicated.
- The ***Contingency Criterion (funding, schedule, staffing)*** evaluates the risk to the successful completion of the project due to a shortage of one or more resources.
- The ***Impact Criterion (consequence of failure, visibility)*** evaluates the risk to the successful of the project in terms of impact to the laboratory.
- The ***Other Criterion*** is applied to any risk element the Project Manager thinks is important for accurately grading the project and is not adequately covered by the other criteria. More significantly, it provides a pathway to integrate the EPG requirements with other LBNL requirements that may apply to the project.

When used to integrate EPG with other LBNL policies, the applicable EPG or LBNL policy set the formality thresholds. The grading process is based on the judgment of the Project Manager (they should consult others; team members, line management, safety coordinator, subject matter experts, etc.).

Low Formality	Medium Formality	High Formality
Configuration Control encouraged	Engineering Change Note (ECN) list (e.g. excel) encouraged, change log (as built) encouraged, additional documentation optional, documented in project repository	Change Control Board, process is formally defined in the project execution plan

PUB-3140 ***Integrated Environment, Safety, and Health Management Plan, Rev. 8*** describes the Core Functions and Guiding Principles of ISM and describes the overall system for implementing ISM at LBNL. It does not explicitly address Configuration Control.

EH&S Requirements

PUB-3000, ***LBNL Health and Safety Manual*** , Chapter 1, General ES&H Requirements, Responsibilities, and Work Practices, Section 1.6, 5. Identification of ES&H Standards and Requirements describes how "All new work activities or **changes to existing work that introduce new hazards or increase the hazard level** need to be reviewed to analyze hazards, identify safety standards and requirements, and establish appropriate controls."

Chapter 6, Work Planning and Control, Section 6.1 Policy, says that "Work is reviewed and the authorization renewed periodically based on the hazards associated with the work or **when the work, hazards or controls change significantly**. Worker authorization must be renewed on the same schedule. Under Section 6.6, Responsibilities, Activity Leads "Stop authorized work when hazards and controls change, and do not reinitiate work until the work activity has been updated and reauthorized, and the required controls are in place. Communicate to workers the scope, hazards, and controls for the activity, including any changes affecting the scope and safety of the activity" and workers are required to "Continually review work and assure that the activity has been analyzed and authorized appropriately. Engage the activity lead to modify the activity as appropriate. Do not proceed with work when the tasks, hazards, and/or required controls differ from those authorized in the completed and active activity.

Bring this to the appropriate supervisor or Activity Lead's attention. Do not begin work until the activity accurately describes the work and has been re-authorized. "

Each hazard-specific chapter of the ES&H Manual describes the appropriate methods of configuration control for the hazard, which may include:

- Procurement controls;
- Design specifications and review / Engineering Safety Notes;
- Control over who can maintain/repair equipment;
- Inventories;
- Work authorizations/Safety Plans; and/or
- Inspections and certifications.

ATAP Requirements

ATAP ISM Plan is posted on the ATAP Safety website: http://atap.lbl.gov/ism-plan/. It does not address Configuration Control.

ATAP is in the process of implementing a standard format for ATAP Procedures.